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10/511,092	04/26/2005	Doron Korngut	Q83511	9605

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EXAMINER	
NGUYEN, SANG H	
ART UNIT	**PAPER NUMBER**
2886	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/511,092	KORNGUT ET AL.	
	Examiner	Art Unit	
	Sang Nguyen	2886	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 April 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-70* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4, 8-10,12, 14-30, 32, 34-42, 43-45, 47,49-67, and 69-70* is/are rejected.

7)☒ Claim(s) *5-7,11,13,31,33,40-42,46,48 and 68* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "an aperture" in claims 1 and 37; the "the optical filters comprising at least one of a polarization filter, a wavelength filter and a spatial filter" in claim 12; and the "telecentric magnifying optics with a first magnification ... the lenses are selectable to vary a second magnification of the images formed by the sensor arrays responsively to the first magnification" in claims 18 and 53 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner,

the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 12, 25, 29-30, 36, 47, 60, and 64-66 are rejected under 35 U.S.C. 102(b) as being anticipated by Yatsugake et al (U.S. Patent No. 5,903,342).

Regarding claims 1 and 36; Yatsugake et al discloses apparatus and method for inspection of a sample, comprising:

a radiation source (31 of figure 1), which is adapted to direct optical radiation onto an area of a surface (S_P of figure 1) of the sample (1 of figure 1);

a plurality of image sensors (373, 374, 383, 384 of figure 1), each of which is configured to receive the radiation scattered (L_R of figure 1) from the area (S_P of figure 1) into a different (figure 1), respective angular range (θ_{RH}, θ_{RL} of figure 1), so as to form respective images of the area; and

an image processor (e.g., extraneous substance detection circuit [51 of figure 2] and data processing device [53 of figure 2]) , which is adapted to process at least one of the respective images from the plurality of image sensor ((373, 374, 383, 384 of figure 1) so as to detect a defect on the surface (figures 3 and 5a-5b).

FIG.1

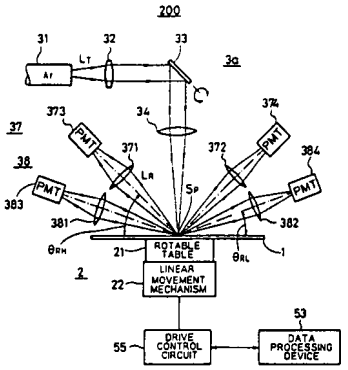


FIG.5(a)

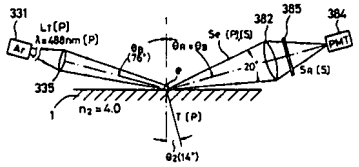


FIG.5(b)

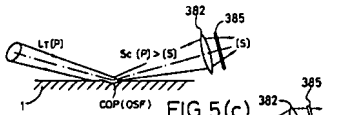
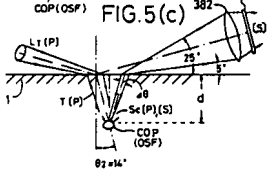


FIG.5(c)



Regarding claims 12 and 47; Yatsugake et al discloses comprising one or more optical filters (385 of figure 5a) respectively associated with each of the image sensors (384 of figure 5a) so as to filter the radiation received by the arrays, the one or more optical filters (385 of figure 3a) comprising at least one of a polarization filter (col.10lines 1-6), a wavelength filter or a spatial filter.

Regarding claims 25 and 60; Yatsugake et al discloses comprising a scanner (figure 10 and col.7 lines 17-19), which is adapted to translate one or more of the sample (1 of figure 10) , the radiation source (31 of figure 10) and the image sensors 36 of figure 10) so as to scan the area imaged by the sensor arrays over the surface of the sample (col.1 lines 30-52).

Regarding claims 29-30 and 64-66; Yatsugake et al discloses the image processor (200, 53 of figure 2) comprises: a plurality of image processing channels (figure 2), each of which is coupled to process the images formed by a respective one of

the sensor arrays (373, 374, 383, 384 of figures 1-2) and to generate a respective output responsive thereto; and a multi-perspective processor (53 of figure 2), which is coupled to process the output from two or more of the image processing channels so as to generate a list of defects on the sample (53b, 54a-54g of figures 2-3).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

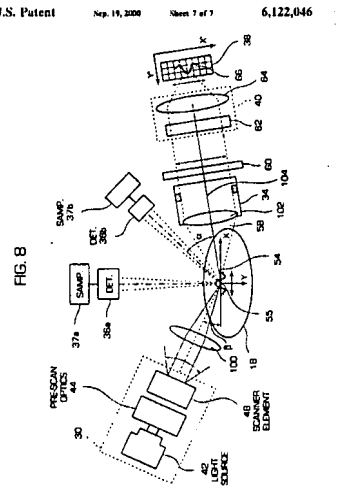
The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 2-3, 18, 37-38, and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yatsugake et al (U.S. Patent No. 5,903,342) in view of Almogy (U.S. Patent No. 6,122,046).

Regarding claims 2 and 37; Yatsugake et al discloses all of features of claimed invention except for further comprising a single objective, which is configured to capture the radiation scattered from the surface within a numerical aperture that includes the

angular range of all the image sensors, and to convey to each of the image sensors the captured radiation in the respective angular range. However, Almogy teaches that it is known in the art to provide optical inspection system having a single objective (34 of figure 8), which is configured to capture the radiation scattered from the surface (55 of figure 8) of the sample (18 of figure 8) within a numerical aperture (col.6 lines 40-47) that includes the angular range of all the image sensors (36, 398of figure 8), and to convey to each of the image sensors the captured radiation in the respective angular range (figure 8). It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine inspection apparatus and method of Yatsugake et al with further comprising a single objective, which is configured to capture the radiation scattered from the surface within a numerical aperture that includes the angular range of all the image sensors, and to convey to each of the image sensors the captured radiation in the respective angular range as taught by Almogy for the purpose of detecting accurately irregularities on the surface with high resolution image.



Regarding claims 3 and 38; Yatsugake et al discloses all of feature of claimed invention except for the objective has a numerical aperture (NA) of at least approximately 0.95. It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine inspection apparatus and method of Yatsugake et al with the objective has a numerical aperture (NA) of at least approximately 0.95, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art, In re Boesch, 617 F.2d 272, 205 USPQ (CCPA 1980).

Regarding claims 18 and 53; Yatsugake et al discloses the radiation source comprises telecentric magnifying optics with a first magnification that is selectable so

as to vary a size of the area irradiated by the radiation source, and comprising multiple lenses associated with each of the image sensors, wherein the lenses are selectable to vary a second magnification of the images formed by the sensor arrays responsively to the first magnification. However, Almogy teaches that it is known in the art to provide optical inspection system having the radiation source (42, 30 of figure 3A) comprises telecentric magnifying optics (figure 3A) with a first magnification that is selectable so as to vary a size of the area irradiated (57 of figure 3A) by the radiation source (42 of figure 3A) , and comprising multiple lenses (34, 60, 32, 40 of figure 3A) associated with each of the image sensors (38 of figure 3A), wherein the lenses (34, 60, 32, 40 of figure 3A) are selectable to vary a second magnification of the images 59 of figure 3A) formed by the sensor arrays (38 of figure 3A) responsively to the first magnification. It would have been obvious to one having ordinary skill in the art at the

time the invention was made to combine inspection apparatus and method of Yatsugake et al with the radiation source comprises telecentric magnifying optics with a first magnification that is selectable so as to vary a size of the area irradiated by the radiation source, and comprising multiple lenses associated with each of the image sensors, wherein the lenses are selectable to vary a second magnification of the images formed by the sensor arrays responsively to the first magnification as taught by Almogy for the purpose of detecting accurately irregularities on the surface with high resolution image.

Claims 4, 8, 39, and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yatsugake etal (U.S. Patent No. 5,903,342) in view of Goldberg et al (U.S. Patent No. 6,882,417).

Regarding claims 4 and 39; Yatsugake et al discloses all of features of claimed invention except for further comprising collection optics, which comprise a plurality of objectives, each of which is respectively associated with one of the image sensors so as to capture the radiation scattered from the surface over the respective angular range, and to convey the captured radiation to the one of the image sensors. However, Goldberg et al teaches that it is known in the art to provide collection optics (figure 3A) comprise a plurality of objectives (col.13 lines 43-57), each of which is respectively associated with one of the image sensors so as to capture the radiation scattered from the surface over the respective angular range, and to convey the captured radiation to the one of the image sensors (figure 18). It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine inspection

apparatus and method of Yatsugake et al with further comprising collection optics, which comprise a plurality of objectives, each of which is respectively associated with one of the image sensors so as to capture the radiation scattered from the surface over the respective angular range, and to convey the captured radiation to the one of the image sensors as taught by Goldberg et al for the purpose of reducing and detecting accurately irregularities on the surface with high resolution image.

Regarding claims 8 and 43; Yatsugake et al discloses the collection optics comprise multiple lenses (371, 372, 381, 382 of figure 1) associated with each of the image sensors (373, 374, 383, 384 of figure 1), and wherein the lenses (371, 372, 381, 382 of figure 1) are selectable so as to vary a magnification of the images formed by the sensor arrays (373, 374, 383, 384 of figure 1).

Claims 9-10 and 44-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yatsugake etal (U.S. Patent No. 5,903,342) in view of Rushbrooke et al (U.S. Patent No. 4,933,961).

Regarding claims 9 and 44; Yatsugake et al discloses all of features of claimed invention except for a plurality of image intensifiers, each of which is respectively associated with one of the image sensors, so as to receive the radiation scattered from the surface over the respective angular range, and to provide intensified radiation to the one of the image sensors, responsively to the received radiation. However, Rushbrooke et al teaches that it is known in the art to provide a plurality of image intensifiers (26 of figure 1), each of which is respectively associated with one of the image sensors (24 of figure 2), so as to receive the radiation scattered from the surface over the respective

angular range, and to provide intensified radiation to the one of the image sensors (24 of figure 2), responsively to the received radiation. It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine inspection apparatus and method of Yatsugake et al with a plurality of image intensifiers, each of which is respectively associated with one of the image sensors, so as to receive the radiation scattered from the surface over the respective angular range, and to provide intensified radiation to the one of the image sensors, responsively to the received radiation as taught by Rushbrooke et al for the purpose of improving image with viewing large the object.

Regarding claims 10 and 45; Yatsugake et al discloses all of features of claimed invention except for the radiation source is adapted to generate pulsed radiation, and wherein the image intensifiers are gated in synchronization with the pulsed radiation. However, Rushbrooke et al teaches that it is known in the art to provide the radiation source (14 of figure 2) is adapted to generate pulsed radiation, and wherein the image intensifiers (26 of figure 2) are gated in synchronization with the pulsed radiation. It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine inspection apparatus and method of Yatsugake et al with the radiation source is adapted to generate pulsed radiation, and wherein the image intensifiers are gated in synchronization with the pulsed radiation as taught by Rushbrooke et al for the purpose of improving image with viewing large the object.

Claims 14-17 and 49-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yatsugake et al (U.S. Patent No. 5,903,342) in view of Yasutake et al (U.S. Patent No. 5,650,614).

Regarding claims 14-16 and 49-51; Yatsugake et al discloses all of features of claimed invention except for the radiation source comprises an optical switch, which is adapted to select at least one of a wavelength of the radiation to be directed the radiation in each of the at least first and second wavelength bands onto the surface and an incidence angle of the radiation on the surface and the radiation in the first wavelength band is normally incident on the surface, while the radiation in the second wavelength band is obliquely incident on the surface. However, Yasutake et al teaches that it is known in the art to provide the radiation source (15 of figure 2) comprises an optical switch (13 of figure 2) , which is adapted to select at least one of a wavelength of the radiation to be directed the radiation in each of the at least first and second wavelength bands (31a, 31b of figure 2) onto the surface (1 of figure 2) and the radiation in the first wavelength band (31 of figure 3B) is normally incident on the surface (01 of figure 3B), while the radiation in the second wavelength band (31 of figure 3A) is obliquely incident on the surface (01 of figure 3A). It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine inspection apparatus and method of Yatsugake et al with the radiation source comprises an optical switch, which is adapted to select at least one of a wavelength of the radiation to be directed the radiation in each of the at least first and second wavelength bands onto the surface and an incidence angle of the radiation on the

surface and the radiation in the first wavelength band is normally incident on the surface, while the radiation in the second wavelength band is obliquely incident on the surface as taught by Yasutake et al for the purpose of improving image with viewing large the object more accurate.

Regarding claims 17 and 52; Yatsugake et al discloses all of features of claimed invention except for the radiation source is adapted to emit radiation in at least first and second wavelength bands and further comprises relay optics, which are coupled to direct the radiation onto the surface so that the first and second wavelength bands are incident on the surface at different incidence angles and irradiate the area of the surface with a substantially similar geometrical profile. However, Yasutake et al teaches that it is known in the art to provide the radiation source (15 of figure 2) is adapted to emit radiation in at least first and second wavelength bands (31a, 31b of figure 2) and further comprises relay optics (figure 2) , which are coupled to direct the radiation onto the surface (1 of figure 2) so that the first and second wavelength bands (31a, 31b of figure 2) are incident on the surface at different incidence angles (figure 2) and irradiate the area of the surface with a substantially similar geometrical profile (figure 2). It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine inspection apparatus and method of Yatsugake et al with the radiation source is adapted to emit radiation in at least first and second wavelength bands and further comprises relay optics, which are coupled to direct the radiation onto the surface so that the first and second wavelength bands are incident on the surface at different incidence angles and irradiate the area of the surface with a

substantially similar geometrical profile as taught by Yasutake et al for the purpose of improving image with viewing large the object more accurate.

Claims 26-28, 32, 34-35, 61-63, 67, and 69-70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yatsugake et al (U.S. Patent No. 5,903,342) in view of Matsuyama et al (U.S. Patent No. 5,900,941).

Regarding claims 26 and 61; Yatsugake et al discloses all of features of claimed invention except for the sample comprises a semiconductor wafer having a pattern of dice formed thereon, and wherein the image sensors are coupled to operate in synchronization with the scanner, so that the respective images are aligned with the dice. However, Matsuyama et al teaches that it is known in the art to provide the sample (3 of figure1) comprises a semiconductor wafer having a pattern of dice formed thereon (col.1 lines 33-40), and wherein the image sensors (6a, 6b of figure 1) are coupled to operate in synchronization with the scanner (col.4 lines 4-12), so that the respective images are aligned with the dice (figure 2a-2B and col.5lines 20-42). It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine inspection apparatus and method of Yatsugake et al with the sample comprises a semiconductor wafer having a pattern of dice formed thereon, and wherein the image sensors are coupled to operate in synchronization with the scanner, so that the respective images are aligned with the dice as taught by Matsuyama et al for the purpose of improving image with viewing large the object more accurate.

Regarding claims 27 and 62; Yatsugake et al discloses all of features of claimed invention except for the dice have boundaries, and wherein each of the image

sensors comprises multiple rows of detector elements and is configurable so as to select a number of the rows to be used in forming the images so that the images are aligned with the boundaries of the dice. However, Matsuyama et al teaches that it is known in the art to provide the dice have boundaries (figure 2A), and wherein each of the image sensors (6a, 6b of figures 2A-2B) comprises multiple rows of detector elements and is configurable so as to select a number of the rows to be used in forming the images so that the images are aligned with the boundaries of the dice (figures 4a-4C and 5). It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine inspection apparatus and method of Yatsugake et al with the dice have boundaries, and wherein each of the image sensors comprises multiple rows of detector elements and is configurable so as to select a number of the rows to be used in forming the images so that the images are aligned with the boundaries of the dice as taught by Matsuyama et al for the purpose of improving image with viewing large the object more accurate.

Regarding claims 28, 32, 34-35, 63, 76, and 69-70; Yatsugake et al discloses all of features of claimed invention except the scanner is adapted to scan the area imaged by the sensor arrays so that the sensor arrays capture first and second respective images of a predetermined area on successive first and second dice along a scan line, and wherein the image processor is adapted to compare the first and second images in order to detect the defect. However, Matsuyama et al teaches that it is known in the art to provide the scanner is adapted to scan the area imaged by the sensor arrays (6a, 6b of figure 1) so that the sensor arrays capture first and second respective

images (figures 2A-2B) of a predetermined area on successive first and second dice along a scan line, and wherein the image processor (8, 9,10 of figure 1) is adapted to compare the first and second images in order to detect the defect (figures 1 and 6-9). It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine inspection apparatus and method of Yatsugake et al with the scanner is adapted to scan the area imaged by the sensor arrays so that the sensor arrays capture first and second respective images of a predetermined area on successive first and second dice along a scan line, and wherein the image processor is adapted to compare the first and second images in order to detect the defect as taught by Matsuyama et al for the purpose of improving image with viewing large the object more accurate.

Claims 19-24 and 54-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yatsugake et al and Almody as applied to claims 1, 18, 36, and 54 above, and further in view of Karpol et al (U.S. Patent No. 6,369,888).

Regarding claims 19 and 54; Yatsugake et al and Almody discloses all of features of claimed invention except for the radiation source is adapted to emit pulsed radiation, and wherein the image sensors are adapted to form the respective images in synchronization with the pulsed radiation. However, Karpol et al teaches that it is known in the art to provide the radiation source (4 of figure 1A) is adapted to emit pulsed radiation, and wherein the image sensors (20 of figure 1A) are adapted to form the respective images in synchronization with the pulsed radiation of the radiation source (4 of figure 1A). It would have been obvious to one having ordinary skill in the art at the

time the invention was made to combine inspection apparatus and method of Yatsugake et al with the radiation source is adapted to emit pulsed radiation, and wherein the image sensors are adapted to form the respective images in synchronization with the pulsed radiation as taught by Karpol et al for the purpose of improving image with viewing large the object more accurate.

Regarding claims 20-21 and 55-56; Yatsugake et al and Almody discloses all of features of claimed invention except for the radiation source comprises a pulsed laser , which is adapted to emit the radiation in pulses shorter than 1 μs in duration; and a speckle-reduction module, which is coupled to de-correlate the radiation so as to reduce a contrast of speckles formed on the area to less than 10%. However, Karpol et al teaches that it is known in the art to provide the radiation source (4 of figure 1A) comprises a pulsed laser (4 of figure 1 and col.6 lines 15-17), which is adapted to emit the radiation in pulses and a speckle-reduction module (30 of figure 1A), which is coupled to de-correlate the radiation so as to reduce a contrast of speckles. It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine inspection apparatus and method of Yatsugake et al with the radiation source comprises a pulsed laser , which is adapted to emit the radiation in pulses and a speckle-reduction module, which is coupled to de-correlate the radiation so as to reduce a contrast of speckles as taught by Karpol et al for the purpose of improving image with viewing large the object more accurate.

Yatsugake et al, Almody, and Karpol et al discloses all of features of claimed invention except for the radiation in pulses shorter than 1 μs in duration and reduce a

contrast of speckles formed on the area to less than 10%. It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine inspection apparatus and method of Yatsugake et al with he radiation in pulses shorter than 1 μs in duration and reduce a contrast of speckles formed on the area to less than 10%, since it has been held that wher the general conditions ofa claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 223.

Regarding claims 22 and 57; Yatsugake et al and Almody discloses all of features of claimed invention except for the speckle-reduction module comprises one or more fiber optic bundles. However, Karpol et al teaches that it is known in the art to provide the speckle-reduction module comprises one or more fiber optic bundles (30 of figures 2A-2B). It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine inspection apparatus and method of Yatsugake et al with the speckle-reduction module comprises one or more fiber optic bundles as taught by Karpol et al for the purpose of improving image with viewing large the object more accurate.

Regarding claims 23-24 and 58-59; Yatsugake et al and Almody discloses all of features of claimed invention except for the speckle-reduction module comprises an opto-electronic transducer, which is coupled to scan an incidence angle of a beam of the radiation over a target plane during each of the pulses so as to de-correlate the radiation. However, Karpol et al teaches that it is known in the art to provide the speckle-reduction module (30 of figure 1A) comprises an opto-electronic transducer

(figures 3-8), which is coupled to scan an incidence angle (figure 1B) of a beam of the radiation over a target plane (figure 1B) during each of the pulses so as to de-correlate the radiation. It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine inspection apparatus and method of Yatsugake et al with the speckle-reduction module comprises an opto-electronic transducer, which is coupled to scan an incidence angle of a beam of the radiation over a target plane during each of the pulses so as to de-correlate the radiation.as taught by Karpol et al for the purpose of improving image with viewing large the object more accurate.

Allowable Subject Matter

Claims 5-7, 11, 13, 31, 33, 40-42, 46, 48, and 68 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art of record, taken alone or in combination, fails discloses or render obvious apparatus and method for inspection of a sample comprising all the specific elements with the specific combination including of the objectives have respective optical axes that intercept the surface at respective oblique angles, and wherein the collection optics further comprise: a plurality of tilt correction units, which are associated respectively with the objectives and are adapted to correct for the respective oblique angles so as to create substantially undistorted intermediate images; and a plurality of

focusing optics, which are optically coupled to focus the intermediate images onto the image sensors in set forth limitation of claims 5 and 40.

The prior art of record, taken alone or in combination, fails discloses or render obvious apparatus and method for inspection of a sample comprising all the specific elements with the specific combination including of the radiation received by the image intensifiers has a first frequency, and wherein the image intensifiers are adapted to provide the intensified radiation at a second frequency, lower than the first frequency in set forth limitation of claims 11 and 46.

The prior art of record, taken alone or in combination, fails discloses or render obvious apparatus and method for inspection of a sample comprising all the specific elements with the specific combination including of the optical radiation comprises radiation of a first wavelength, and wherein the scattered radiation comprises fluorescent radiation generated by the sample at a second wavelength responsively to the radiation of the first wavelength, and wherein the wavelength filter is selected so as to permit at least one of the image sensors to capture the fluorescent radiation of the second wavelength while rejecting the radiation of the first wavelength in set forth limitation of claims 13 and 48.

The prior art of record, taken alone or in combination, fails discloses or render obvious apparatus for inspection of a sample comprising all the specific elements with the specific combination including of an energy meter, which is adapted to sense variations in intensity of the radiation emitted by the radiation source, wherein the image

processing channels are adapted to normalize the images responsively to the variations sensed by the energy meter in set forth limitation of claim 31.

The prior art of record, taken alone or in combination, fails discloses or render obvious apparatus and method for inspection of a sample comprising all the specific elements with the specific combination including of each of the image processing channels is adapted to detect locations of deviations in the images formed by the respective one of the sensor arrays relative to a predefined reference, and to correct the coordinates of the pixels at the locations of the deviations for output to the multi-perspective processor, without correcting the coordinates of at least some other pixels in the images in set forth limitation of claims 33 and 68.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Vaez-Iravani (7116413) discloses inspection system for integrated applications; Danko (6621570) discloses method and apparatus for inspecting a patterned semiconductor wafer; Chuang etal (6137570) discloses system and method for analyzing topological features of a surface; Tsai etal (5822055) discloses optical inspection od a specimen using multi-channel; or Zinter etal (5500770) discloses macrolens system for emission microscopy.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sang Nguyen whose telephone number is (571) 272-2425. The examiner can normally be reached on 9:30 am to 7:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tarifu Chowdhury can be reached on (571) 272-2800 ext. 86. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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